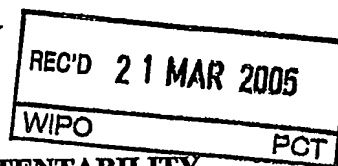


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference A2463PC	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI 2003/000962	International filing date (day/month/year) 16.12.2003	Priority date (day/month/year) 23.12.2002
International Patent Classification (IPC) or national classification and IPC D21C 3/22, D21C 9/08		
Applicant ARIZONA CHEMICALS B.V. et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

- a. ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
- ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 21.07.2004	Date of completion of this report 11.03.2005
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Marianne Bratsberg/MP Telephone No. +46 8 782 25 00

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000962

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 13 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 14A-16A received by this Authority on 15.11.2004

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000962

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>10-12, 14-16</u>	YES
	Claims	<u>1-9, 13, 17-20</u>	NO
Inventive step (IS)	Claims	<u>10-12, 14-16</u>	YES
	Claims	<u>1-9, 13, 17-20</u>	NO
Industrial applicability (IA)	Claims	<u>1-20</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The claimed invention relates to a wood cooking aid, a method for preparing the wood cooking aid and the use of the wood cooking aid in the cooking of hardwood. The object of the invention is to improve the removal of extractives in pulp production.

Of the documents cited in the International Search Report the following will be discussed:

D1. SE 311 468 B

D2. US 4673460 A

Document D1 discloses as known art the use of tall oil or soap as cooking aid in the cooking of hardwood, preferably birch, in order to solve problems with extractives, see page 2, line 11-line 16 and page 3, line 14-page 4, line 1. This is also admitted as prior art in the application.

D2 discloses a method for reducing the levels of natural resins in pulp. The deresinating composition used comprises a fatty acid derived from a mixture of tall oil fatty acids also containing rosin acids, see column 3, line 23-32.

The wood cooking aid defined in claim 1 is not considered to differ from the known art. As is well-known in the art, tall oil contains fatty acids, rosin acids and unsaponifiables, see e.g. Chemistry of Wood, E. H  gglund, 1951, Academic Press Inc. page 490-491. In claim 1 it is stated that the ratio of fatty acid and rosin acid is effective in removing the extractives

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V

in pulp production. This definition cannot be regarded as a distinguishing feature since it is unclear and only expresses desired properties of the cooking aid.

The contents of fatty acids, rosin acids and unsaponifiable materials, defined in claims 2 and 3, do not differ from the content of these components in tall oil; cf. the above cited hand-book.

The fatty acids and rosin acids defined in claims 4-9 are acids present in tall oil. Thus, the features in these claims do not differ from the known use of tall oil as deresinating agent, nor does the feature in claim 13.

The method according to claim 17 and the use in claim 20 do not differ from the known art. The step of preparing the salt in claims 17-19 is optional and cannot be regarded as a distinguishing feature. Further, it is known to use soap as cooking aid and a preparation of salts of the acids in a well-known manner is obvious to a person skilled in the art.

Consequently, the invention defined in independent claims 1, 17 and 20 is not considered to differ from the known art of using tall oil as a deresinating agent, neither are the embodiments in dependent claims 2-9, 13 and 18-19.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000962

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The claims do not clearly define the invention. An important factor for solving the stated problem and for distinguishing the invention from the known art of tall oil as cooking aid is, according to the description, the distribution of the fatty acids and the rosin acids and the content of unsaponifiable material in the cooking aid. Features, clearly defining the contents of the acids and the unsaponifiable material in the cooking aid, important for solving the intended problem, are lacking in the claims.

14A

Claims

1. A wood cooking aid **characterized** in that it comprises a mixture of fatty acids and rosin acids and/or salts thereof in a ratio which is effective in removing the extractives in pulp production and that said fatty acid rosin acid mixture contains less than about 15 % unsaponifiable material.
2. A wood cooking aid according to claim 1 **characterized** in that said salts are soaps of said acids and that said fatty acid rosin acid mixture contains preferably less than about 10 %, more preferably less than about 5 % unsaponifiable material.
3. A wood cooking aid according to claim 1 **characterized** in that said fatty acid rosin acid mixture comprises about 20 to about 98 %, preferably about 35 to about 80 %, more preferably about 50 to about 70 % rosin acids and about 70 to about 2 %, preferably about 55 to about 15 %, more preferably about 45 to about 25 % fatty acids.
4. A wood cooking aid according to claim 1 **characterized** in that said rosin acids comprise tall oil rosin acids, preferably abietic acid, dehydroabietic acid and/or palustric acid.
5. A wood cooking aid according to claim 1 **characterized** in that said rosin acids comprise pimaric acid and/or 8,15-pimaric acid.
6. A wood cooking aid according to claim 1 **characterized** in that said fatty acids comprise vegetable based fatty acids and/or animal based fatty acids, such as tallow.
7. A wood cooking aid according to claim 1 **characterized** in that said fatty acids comprise unsaturated fatty acids.
8. A wood cooking aid according to claim 1 **characterized** in that said fatty acids comprise oleic acid, linoleic acid and/or pinolenic acid.
9. A wood cooking aid according to claim 1 **characterized** in that said fatty acids comprise branched fatty acids, conjugated fatty acids, synthetic fatty acids and/or cyclic fatty acids.

15A

10. A wood cooking aid according to claim 1 **characterized** in that said fatty acids comprise the monomer part produced during dimerization of fatty acids.
11. A wood cooking aid according to claim 10 **characterized** in that said monomer part contains branched oleic acids 13 to 20 %, branched stearic acids 7 to 20 %, oleic acid 15 to 25 %, other fatty acids 28 to 58 % the rest being unsaponifiable material.
12. A wood cooking aid according to claim 11 **characterized** in that the fatty acid distribution of said monomer part is branched oleic acids about 14 to about 16 %, branched stearic acid about 13 to about 15 %, oleic acid about 19 to about 21 %, other fatty acids about 42 to about 44 %.
13. A wood cooking aid according to claim 1 **characterized** in that said fatty acids and said rosin acids are derived from tall oil.
14. A wood cooking aid according to claim 1 **characterized** in that said fatty acids and said rosin acids comprise fractions of distilled tall oil.
15. A wood cooking aid according to claim 14 **characterized** in that said fatty acids comprise 5,11,14-C20:3 and 11,14-C20:2.
16. A wood cooking aid according to claim 1 **characterized** in that said fatty acids and said rosin acids are derived from distilled tall oil and/or tall oil rosin and/or tall oil fatty acids.
17. A method for preparing a wood cooking aid according to claim 1 **characterized** in that fatty acids and rosin acids are provided in a mixture in a ratio which is effective in removing the extractives in pulp production, and if desired salts of said acids are prepared by reacting said fatty acid rosin acid mixture containing the desired fatty acid and rosin acid distribution with water and sodium hydroxide.
18. A method for preparing a wood cooking aid according to claim 17 **characterized** in that said reacting is performed in a pressure reactor at a temperature above 100 °C.

16A

19. A method for preparing a wood cooking aid according to claim 17 **characterized** in that said reacting is performed in a continuous reactor.

20. Use of the wood cooking aid according to claim 1 **characterized** in that a wood cooking aid comprising salts of fatty acids and rosin acids in a ratio which is effective in removing the extractives in pulp production is used in cooking of hardwood, preferably birch.